Annual Report 1990-1991

EUROPEAN ACADEMIC & RESEARCH NETWORK

Contents

1991 Executive Committee :

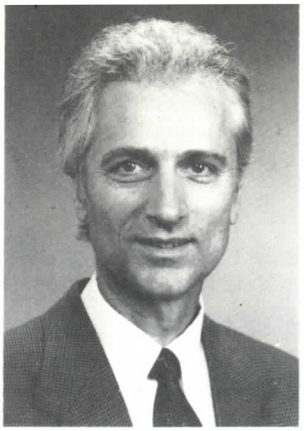
From left to right :

L. Csaba
A. Cohen
Vice President

S. Orphanoudakis
P. Bryant
Treasurer

J.-L. Delhaye
M. Sommani
General Secretary

F. Greisen
President
H. Deckers
Manager



President's Report

Established in 1985, EARN has become a stable provider of networking services for research and academic users in Europe, the Middle East and Africa. The EARN community now comprises 937 host computers in 550 institutions in 27 countries and the traffic volume increased by 57% from 1989 to 1990 up to a volume of 6 billion records. The provision of this service relies on the technical experts at host sites assisted by EARN staff.

In 1990, the main development was the connection of new East European countries in the months following the statement we obtained from the US Department of Commerce that EARN could connect to COCOM proscribed countries - with some restrictions on speed and services. Poland was first to connect, soon followed by Hungary and CSFR, and EARN is already an important tool for the academic community in those countries. Furthermore, Romania, Bulgaria and USSR have plans to connect.

What EARN offers to the new countries is that by becoming a member of just one organization, and by using well established and widely accessible technology, they can exchange electronic mail and files with and use the value added services in 45 other EARN/BITNET countries. Furthermore, due the the gateways and bilateral agreements of EARN and CREN (the new name for the BITNET organization) with other networking organizations they can communicate with colleagues in a total of 90 countries.

Networking is in rapid change and EARN must also change. We have therefore at all times had a significant technical and organizational development activity. One such major project was the EARN OSI project which has now been successfully concluded. With generous support from DEC, IBM and Northern Telecom software stacks were developed and systems installed enabling countries to run the EARN NJE protocols on top of the five lower OSI layers, including X.25. Several countries now employ this system for their international EARN traffic using the private X.25 network IXI which is on a temporary basis provided for the community by the COSINE project.

However, other countries chose to rely on the TCP/IP protocol suite which has been massively adopted in the US and which allows the CREN core sites to ship traffic via NSFnet. According to this move, in 1991 EARN has developed a regionalization plan to group the EARN hosts around core sites which have multiple links between them. This means both increased bandwidth and alternative routes in case of line failure so that users get improved performance and reduced response times.

The regionalization has only been economically feasible by cooperation and line sharing with other organizations. In the mid-eighties, a 9.600 bps EARN line was often the only international connection for academic networking in a country whereas the community is now slowly but steadily taking advantage of economy of scale by sharing international lines running from 64 kbps up to 2 Mbps.

In 1990, EARN adopted a strategic plan. Working according to this plan we have increased our geographic coverage and moved to higher speeds in large portions of the network. We have put a focus on tools and documentation to make the use of the network easier for new and occasional users. We are working to improve application services such as data base access. We shall continue to provide low cost networking services to our community - where appropriate in cooperation with other organizations.

F. Greisen

Frode Greisen
President

Secretary General's Report

The autumn of 1990 saw Marco Sommani becoming Secretary General of EARN in place of Paul Bryant who became the Treasurer. In deciding not to seek re-election Paul commented "however good or bad an officer has been a change is healthy for the organisation". During his time he concentrated in making EARN work efficiently. This has been very successful in turning EARN from being seemingly arcane and muddled into being open and well organised. That of itself does not solve the many problems EARN is faced with but it does ensure that the Executive and Board of Directors can concentrate on the real issues with the full and well researched facts before them. Paul admits that in concentrating on the organisation he neglected the publicity aspects of the job. He hopes that his successor, in inheriting a smooth running organisation, can concentrate his different but undoubted talents on these other aspects that certainly need attention.

In his report to the 1990 Autumn Board meeting, Paul paid tribute to his long suffering colleagues who had to endure his continual nagging for proposals and reports. In particular he paid tribute to Frode Greisen with whom he had developed an excellent working relationship that had been of great value and without which little would have been achieved. He is a privilege to work with in these changing and difficult times.

EARN has been faced with a much more complex environment. There have been many more organisations and network providers to work with. EARN has had to build relations with IXI, EASInet, RIPE, NT and DEC as well as maintaining good relations with its original friends such as IBM, BITNET, CEPT and RARE. It is only by being well organised with strong but appropriate policies that the best services can be provided to the customers. Undoubtedly the presence of permanent staff has been of great help in archiving EARN's objectives.

During the last two years the Executive and Board have been subjected to several hundred papers dealing with the trivial ephemeral issues such as hotel bookings to the important strategy papers. A task now under way is to extract the important papers of lasting interest as a convenience. Such papers include the Code of Conduct, Management of Change and others, which govern the day to day life of the network. Of particular note is the EARN Operational Procedures that draws together many small decisions taken over the years. Some of these have never been written down but are needed so that EARN can concentrate on important issues rather than the bureaucratic but necessary mechanisms needed to run the organisation.

Marco Sommani has already made significant changes to the way things run. With permanent staff it is now appropriate for them to carry out many duties that were performed by Paul, such as minute taking and issuing or archiving documents. This has been most successful and indeed Hans Deckers, the EARN manager, has introduced his own ideas for further improving EARN's decision making. Of particular note is the introduction of regular quarterly reporting on EARN's major activities. These cover traffic statistics, finance, and use of staff. This allows easy comparison between periods leading to the early identification of problems and a wealth of data on which to base decisions. As a result of these changes the EARN document archives have been moved from the filelist EARN-MIN at UKACRL to FRORS13. There is also a plan to move the EARN-BOD and EARNEXEC distribution lists from IRLEARN to FRORS13.

The number of documents that are stored on EARN-MIN FILELIST is large and increasing. It is difficult to select documents which treat particular subjects, since the EARN INDEX only lists the titles that are often cryptic and have little meaning. The LISTSERV database driver has been modified by the ASTRA team (see report BOD22 91) to enable more sophisticated searches in the EARN archives. An ASTRA-LISTSERV interface is being developed that will make it possible and easy to search the LISTSERV database through the ASTRA interface.

Marco believes that the problem of providing easy access to network information should be a main concern of the Secretary General of EARN and of the Association. This is not the place to elaborate this subject further as many interesting suggestions can be found in the EARNSTRA paper (BOD10 91). Certainly Marco will develop the ideas for access to data in the EARNSTRA paper and he looks forward to discussions and feedback on the ideas.

An important project is the complete revision of the EARN Pocket Guide produced originally in Germany. The EARN staff hope to have this complete during the autumn of 1991.

Technical work in EARN

This report gives a status of the technical work in EARN following the structuring approved by the BoD in June 89. See the document "Organization of Technical work in EARN", distributed through LISTSERV@FRORS13 as the published document BOD31 89.

Three new project groups have been set up in 1990 and 1991

- EARN Routing Project Group (EARN-RPG)
- EARN-IXI Project Group.
- EARN Performance Evaluation Project Group (EARN-PEG)

EARN Permanent Groups

- **EARN-NOG**

  The EARN Network Operations Group (EARN NOG) was created in 1987.

  The EARN-NOG is responsible for the operations of the EARN international backbone and has to approve all technical changes on the EARN international backbone. The EARN-NOG has to approve any proposed EARN directive or recommendation.

  The NOG members are:

  – One NCC (Network Country Coordinator - technically responsible for EARN in his/her country) per country, and possibly a NCC deputy.
  – The EARN manager, who chairs the EARN-NOG.
  – Major tools developers.
  – EARN staff.

  The EARN-NOG meets twice a year, usually just before the BoD meetings. For each meeting, minutes are produced, and they are available through LISTSERV@FRORS13 as published documents:

  – BOD47 90 Minutes of the 4th NOG Meeting in Killarney - May 90
  – BOD6 91 Minutes of the 5th NOG Meeting in Cairo - November 90
  – BOD37 91 Minutes of the 6th NOG Meeting in Copenhagen - June 91

  Almost all connected countries are represented in EARN-NOG meetings.

- **EARN-INFO**

  In October 1989, the BOD established the EARNINFO permanent group (BOD51 89). Each EARN member country was asked to appoint a representative (INFOrep) and possibly a deputy to this new group.

  The EARN Permanent Group on Information Services is responsible for information and documentation on EARN and EARN services as well as information on other networks and services accessible from EARN. It now has members from 20 EARN countries, plus Canada and the USA, subscribed to its LISTSERV list, EARNINFO.

  The first meeting of the EARN Permanent Group on Information Services took place in Killarney, Ireland on Monday, 14th May 1990. The meeting was attended by 21 representatives from 13 countries.

  The second meeting of the Group took place in Copenhagen on Monday, 17th June 1991. The meeting was attended by 17 representatives from 10 countries. This was an opportunity for the members to meet the newly appointed EARN Info Coordinator, David Sitman.

  The EARN-Info Terms of Reference (available from LISTSERV@FRORS13 as document BOD51 89) were discussed and priorities were set for future activities. It was decided that, as a first step, a list of available documents should be compiled in order to determine what can be of use to EARN, what can be adapted, and

what is lacking. Several documents from Bitnet and from EARN member countries have been put forward as candidates for adaptation and/or translation for general EARN use. The main documents to be developed are:

- EARN Guide for new users
- EARN Guide for new installations
- EARN Guide for new countries
- EARN Reference Card for users

These documents will contain modules on the major operating systems in use in EARN and the major EARN services.

To develop these documents EARN has contracted the services of an EARN Information Coordinator. Also some staff resources of the EARN have been allocated to this task.

EARN Project Groups

- **EARN-RPG**

At the BoD meeting in Killarney (agenda point 23.6) the EARN EXEC was instructed to create a project group to study routing and networking topology. Then the Group was set up to implement the policy decisions made by the EARN Board, and to enable the use of multiple transport networks, using multiple different protocols at the Session/Transport layer, and to incorporate additional non EARN links in the EARN NJE network. The name of this project group is EARN-RPG and the chairman is Hans-Ulrich Giese, who is working for EARN as NJE Network Master Coordinator (NMC).

The Terms of Reference for the Group are in EXEC69 90. The Group had a first meeting on 13 July 1990 at the EOC in Amsterdam (minutes are reported as EXEC74 90) and a second one on 7 November 1990 in Cairo (minutes are reported as EXEC14 91). A proposal for the regionalization of EARN has been worked out by the group during the Cairo meeting and has been approved by the BoD. (available as document BOD7 91)

- **EARNSTAT**

The EARNSTAT Group is established with staff from international nodes and others contributing to the goal of providing statistic of the EARN traffic, primarily the international part, to provide a basis for configuration and routing and maybe cost sharing.

- Members of the group are staff of international nodes, EARN staff and others network specialists.
- The EARNSTAT group never met explicitly, a great part of the members being also members of the EARN-NOG permanent group, and the statistic topic it is usually discussed during the NOG meetings.

The EARNSTAT group produced a report about the use of traffic data as base for countries contributions to EARN. This report has been presented at the BoD Meeting in Killarney as document BOD62 90.

In June 1991 the activities of the EARNSTAT group have been taken over by the EARN-PEG.

- **EARN-PEG**

In June 91 The Executive approved the creation of a Performance Evaluation Project Group. The Terms of Reference of the EARN-PEG are available as EXEC51 91.

The EARN-PEG will take over the results of the EARNSTAT group and in addition to statistics will develop tools and procedures for measuring the performance of the network. The EARN-PEG is chaired by Daniele Bovio, from the EARN Office in Paris.

The group will be studying items like: lines downtime, turn around time, queues length, traffic data, and others.

- **EARN-X25**

The goal of the Group was to get the EARN X.25 backbone working according to the OSI migration plan (BOD55 89). The EARN-X25 Group was established from staff at the switch sites and those working with the G-boxes and E-boxes.

After the decision of closing the EARN X.25 infrastructure (see plan in EXEC55 90) the activity of the group was moved to the EARN-IXI group.

- **EARN-SNA**

The EARN-SNA Group, chaired by Marco Sommani, has the task to suggest the optimal utilization of SNA on the EARN international backbone in the interest of the overall user community.

The use of SNA protocols to transport EARN NJE traffic has also been the subject of study for some time by the EARN-SNA Group. Initial directives and recommendations have been published, but these have to be revisited in the light of the new policy decisions taken by the Board. In particular, there seems no reason in principle to limit SNA terminal sessions provided that sufficient bandwidth is available to NJE traffic.

The group met in Killarney, May 15th 1990, where a document on EARN SNA recommendation and directives was produced and published as BOD36 90.

- **EARN-Value Added Services**

This group has the task of identifying development areas for Value Added Services in EARN together with possible contractors and founding sources. The terms of references are published as EXEC118 89.

The Group has not yet been activated, owing to the fact the money available for developments, in the EARN budget, is very scarce. Possibilities have to be investigated of developing value added services with external funds (i.e.: CEC and COSINE). Before developing new services, it is recommended to make an inventory of the existing services. The EARN INFO Group will take care of this task.

- **EARN-ASTRA**

This group, chaired by Stefano Trumpy, has been appointed by the Executive to activate the ASTRA EARN service for the dissemination of information available on databases distributed over the network. During a first meeting, held in Pisa in November 1989, a document indicating also the resources required and the possible financing sources was prepared. The document "Proposal for an EARN ASTRA Service" is available through LISTSERV@FRORS13 as the published document EXEC156 89. A second meeting took place in Killarney, May 14th 1990.

The minutes of the EARN ASTRA project group meeting N.2 are available as document EXEC67 90 through LISTSERV@FRORS13.

The Executive approved in the summer of 1990, that Silvia Giordano and Esra Delen joined the team as consultants paid by EARN for an initial period of one year. Providing access to new databases was defined as a primary goal. The Executive wants a target of 5 international ASTRA sites within twelve months.

The following progress reports are available on the activities of the ASTRA group: EXEC122 90 and BOD22 91.

- **EARN-Security**

The document on Security (EXEC90 89), prepared by Eric Thomas, was sent to IBM for starting actions to improve the security of NJE networks, like EARN. IBM promised to give course to the actions required.

In January 1990 EARN received a follow-up letter from IBM stating that the exposures detailed in the document would be corrected in future products.

In August 1991 the EARN President, Frode Greisen, wrote a letter to R. Riverso, President of IBM Europe, to draw his attention to the lack of progress in this area and to request a solution before the end of 1991.

- **EARN-IP**

The EARN-IP group was created as a Special Interest group, chaired by Hank Nussbacher, and became a project group as proposed by the EARN Executive, April 1990. The use of IP networks to transport EARN NJE traffic has been the subject of study by the EARN-IP Group, and recommendations and directives for the use of NJE/IP are being developed. The group has the task to coordinate the EARN participation into the European IP community (RIPE). The group will propose solutions for utilization of IP on international lines, for routing problems, etc... . A document about NJE-IP policy and procedure and has been presented for

approval to the BOD in Killarney and is available through LISTSERV@FRORS13 as published documents BOD10 90

- **EARN-IXI**

  The EARN-IXI project was set up to support the decision by the Board to test the IXI network as one of the transport networks for EARN NJE traffic, and the decision not to have an EARN private backbone, gave additional impetus to the testing of IXI for EARN. An EARN-IXI Group has been set up, and is establishing plans and procedures for the testing of NJE/OSI over IXI. Terms of reference for this Group are given in EXEC72 90.

  Significant progress has been made, and NJE/OSI links between the G-Boxes (micro-VAX'es with an OSI software stack), between existing IBM backbone nodes (the E-Boxes), and between G-Boxes and E-Boxes have been successfully tested. A number of lead sites have been identified, and these are conducting this testing. Transfer of Pilot traffic - i.e. real traffic over NJE/OSI over IXI in a controlled manner with appropriate fallback, was completed in January 91. Staff at EARN lead sites, and EARN staff at the Paris Office and the EARN OSI Center are to be congratulated on this progress. A complete set of documents describing every aspect of this project is available. For further information see EARN-IXI INDEX @ FRORS13.

EARN Special Interest Groups

These groups have been started informally by EARN Technical Community and are constituted by open lists of those interested in the subject. The existing groups fall mainly in the area of the EARN services and are:

- **X.400**

  The X.400 group was set up to study the migration process towards full standard X.400 services.

- **NETSERV-L**

  The NETSERV-L group works in the area of NETSERV services.

- **RED**

  The RED group works in the area of TRICKLE services.

- **LISTEARN**

  The LISTEARN group works in the area of development of LISTEARN, which is based on LISTSERV program developed by Eric Thomas.

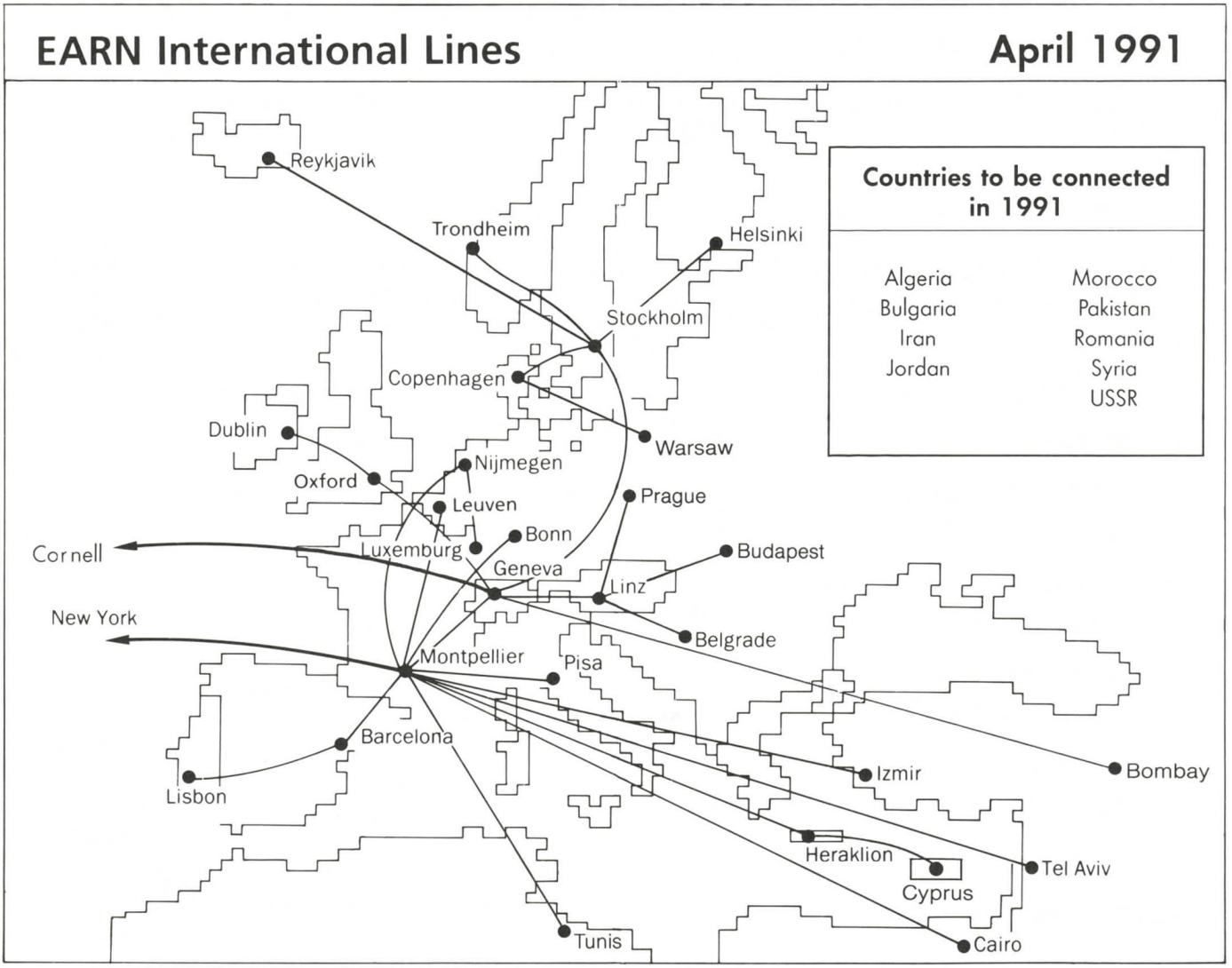
- **GENROUTS**

  The GENROUTS group has been replaced by the EARN-RPG Group.

EARN Technical Forum

The second EARN Technical Forum took place in Killarney on May 15, 90 (the minutes are reported in EXEC79 90). A part of the meeting was devoted to analyze the aspects of the participation in the COSINE Project. Mr. H. Davies, director of the interim COSINE Program Management Unit (CPMU), and Mr. J. Peres Vidal, Project Officer of the CEC for COSINE Project, gave an overview of the COSINE activities in this implementation phase.

International Lines



EARN-RARE Conference 1990

The EARN/RARE Joint Networking Conference which was held at Killarney, Ireland, 15-17 May 1990. The two organizations had decided to arrange one meeting to combine the annual EARN conference and the RARE Networkshop. The motivation for this joint effort was to share the common ground covered by the two organizations and the community that they serve and to further explore the possibilities for cooperation in order that research workers and academics can communicate more effectively with each other and with each other's systems.

The program was as follows :

1. Policy Issues

   The introductory keynote speech, an outsider's view on network on network policy and a proposal of marriage from a traditional purveyor of information.

2. Association Reports and Regional Reviews

   EARN, RARE and RIPE activities over the last year and reviews from East Europe, Africa and Ireland.

3. Networking Technology

   Security, groupware, and high speed futures.

4. Transition to New Standards

   Advances to OSI from different directions, mail progress and character set issues.

5. Developing the Infrastructure

   "Fat Pipes", X.25 international operations, and networks on the move.

6. Promoting, Providing and Using the Services

   User oriented support and networking applications.

7. Posters

   Two winning submissions from the conference displays.

The local organization was provided by Computer Services, University College Dublin.

The conference was sponsored and supported by DEC Europe, IBM Europe, NT Europe, Siemens, Aer Lingus, Apple Ireland, Amdahl Ireland, Business Automation, CARA, Gandalf Communications, IBM Ireland, Telecom Eireann and Wang.

Facilities for communications via Irish PTT X.25 network were provided and these were heavily used by the attendees-at all times of night and day.

The conference was attended by 391 delegates from 30 countries. Not only Western Europe but also Czechoslovakia, the Dominican Republic, Egypt, East Germany, Hungary, Poland, Tunisia, USA and Yugoslavia were represented.

International Networking Conference INET'91

Copenhagen - June 18-20, 1991

In 1991, RARE decided that they wanted to have the overall responsibility for organizing the annual European networking conference. This conference took place in Blois, France in May with about 360 attendees and EARN contributed to this event in parallel with several other networking organizations. EARN also decided to put a major effort into supporting the firstly global conference for academic and research networking, INET'91.

The idea of INET'91 came up in Sydney in December 1989 at the 7th International Academic Networkshop. During the previous years networking had grown from being used by pioneers into a day to day tool for academic researchers in all disciplines in more and more countries. However, researchers would use networks provided by scores of different organizations. It was felt that there was a need for an open conference where users, policy makers and network engineers from all over the world could share experiences and ideas.

For EARN INET'91 was its main conference event for 1991. EARN's president Frode Greisen, was the European Co-Chair and host to the conference. EARN's Board of Directors, Executive Committee and technical project groups had their meetings in conjunction with INET'91.

380 delegates from more than 50 countries have made it to Copenhagen. These delegates use and plan anything from dedicated gigabit networks to dial-up 1200 bps connections, but they share a vivid interest in improving international academic communication. It has been a challenging job to develop a program of interest to such a diverse forum, but we hope we have succeeded by working with "the network", that amorphous group of people from about 60 countries who in cooperation and competition design, fund, develop, run and use electronic mail and other network services.

The program had a number of keynote an plenary talks each morning reviewing policies and plans from very general perspectives and it then divided into parallel sessions. There were quite technical sessions discussions of workstations, future technologies, the Internet and the role of commercial service providers. Other sessions had a geographical focus including Europe, Eastern Europe, Asia and the pacific rim, North America and Latin America. A third family of sessions concentrated on applications in specific branches like the physical sciences or libraries. Finally there were sessions focusing on present policy constraints and on new tools that are expected to become available within the next decade.

Corporate sponsors

- IBM, DEC, Novell, Northern Telecom and Advanced Network & Services Inc.

Sponsoring Organizations

- Coalition for Networked Information, CREN, EDUCOM, FARnet, IAB and NetNorth in North America
- WIDE, TISN and JAIN in Japan
- EARN, NORDUNET, EUUG (EUnet) and RARE in Europe

Conference co-chairs

- Frode Greisen, Europe
- Larry Landweber, North America
- Jun Murai, Pacific Rim

Program Committee co-chairs

- Juha Heinanen, Finland
- David Farber, USA
- Atsushi Matsushita, Japan

Local Organization

- UNI-C, the Danish Computing Centre for Research and Education
- Project leader Ole Carsten Pedersen.

Statistics

EARN collects traffic figures on international links. These statistics are needed to show the load on lines and to indicate the need for:

upgrading of lines
relocation of servers
changes in network topology

Each international EARN node has to collect on a monthly basis traffic data on international links to and from all other countries. Although some countries have problems implementing this directive, we still have sufficient data, due to redundancy.

In the table one sees the traffic for 1990 compared with that for 1989. The total traffic increased with 57 per cent, from 3.8 to 6 billion records.

83.5 percent of the total traffic was exchanged within EARN countries. 90 percent of the total traffic with non-EARN countries was with the USA.

Summary of records sent and received between 01/90 and 12/90.							
Country	1990	%	1989	Country	1990	%	1989
Argentina	276382	0.0	29710	Austria	282507614	4.7	157966018
Belgium	243890312	4.1	143412986	Brazil	9650300	0.2	629003
Canada	47631035	0.8	16030722	Switzerland	520465574	8.7	368796834
Ivory Coast	8664	0.00	2088	Chile	2496368	0.04	443729
Columbia	22586	0.00	-	Costa Rica	5321	0.00	-
CSFR	1962141	0.03	-	Cyprus	828	0.00	69
Germany	170195830	19.5	736273581	Denmark	60507990	1.0	51833005
Ecuador	0	0.00	0	Egypt	6398935	0.1	1423572
Spain	53353821	0.9	97289277	Finland	128100662	2.1	130385966
France	669635723	11.1	304430692	Great Britain	328896803	5.5	263239578
Greece	91999751	1.5	69197605	Hong Kong	1854706	0.03	0
Hungary	905970	0.02	-	Ireland	86212039	1.4	90229977
Israel	291283165	4.8	275196839	India	5039329	0.08	34
Iceland	3972	0.00	718	Italy	270772589	4.5	242790420
Japan	7980710	0.13	3649884	Korea	2039394	0.03	1354647
Kuwait	119250	0.00	8934	Luxembourg	5747259	0.10	2063461
Mexico	1481845	0.02	610147	Malaysia	104	0.00	-
Netherlands	335916255	5.6	258818257	Norway	92991177	1.5	46000772
Poland	1245437	0.02	-	Portugal	56376958	0.9	34278057
Saudi Arabia	1304130	0.02	120110	Sweden	126469637	2.1	51095830
Singapore	3766538	0.06	892667	Tunesia	1042	0.0	-
Turkey	182794093	3.0	121563202	Taiwan	9727495	0.16	3696254
USA	888747813	14.8	351964050	Yugoslavia	20731964	0.3	2111252
TOTAL	6011519530	100.	827829890				

Regionalisation of EARN

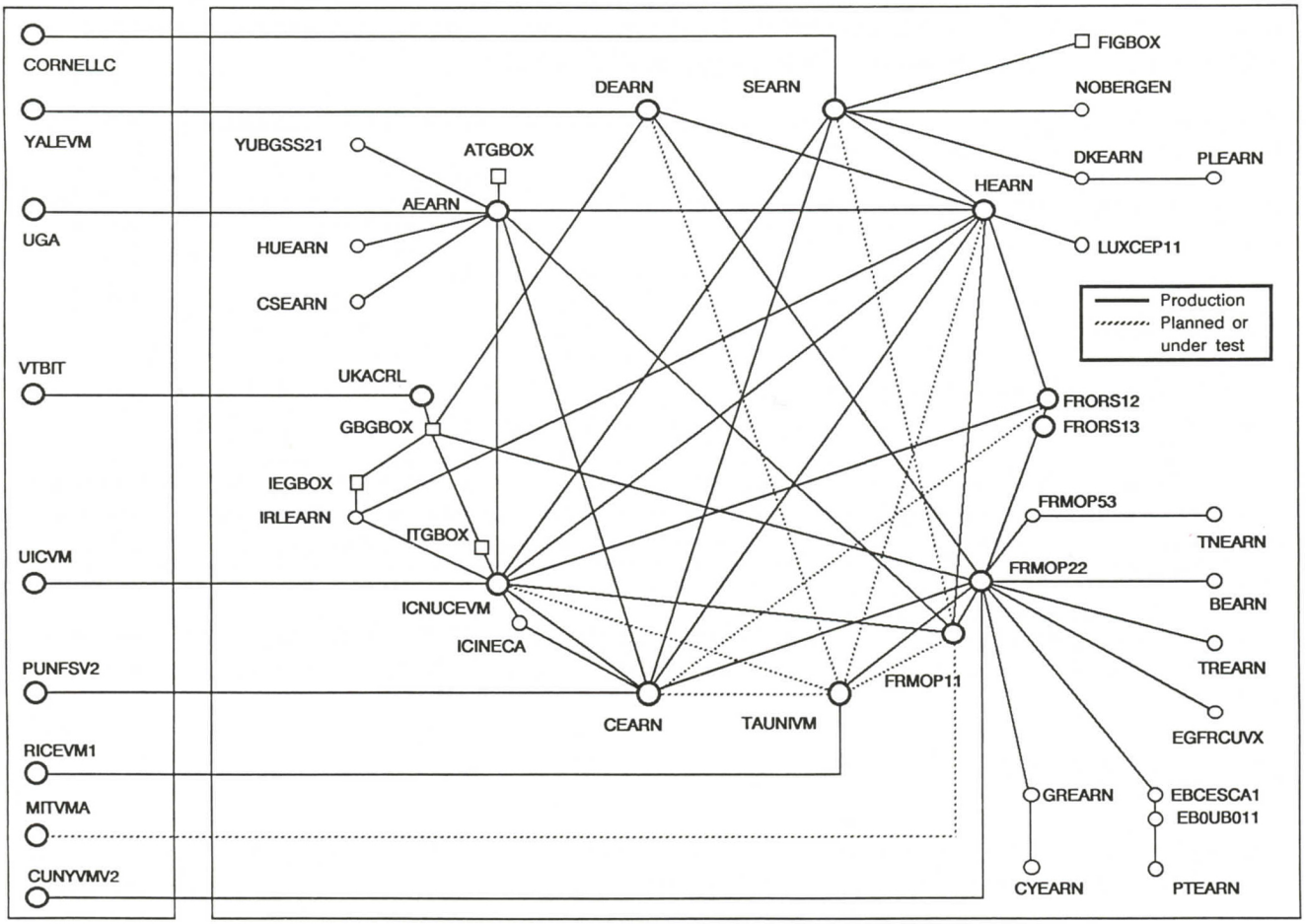
The Board of Directors, during the meeting held in Copenhagen on June 1991, approved a proposal about the Regionalization of EARN (BOD7 91) issued by the EARN Routing Project Group.

The RPG plan is based on the separation of the network into areas, mainly following the model already adopted by BITNET for the definition of the BITNET II network. The criteria followed for the division is based on the density of nodes, traffic, and need of services in the area. The regions are connected trough a set of EARN sites (called "core sites") located on strategical positions from the point of view of traffic patterns and connectivity, with the capability to have NJE links among them and in some case NJE/IP links with selected partners on the BITNET II core.

The goal is to improve the whole performance of the network reducing the load on the key sites in Europe like CERN and CNUSC and to exploit several existing IP lines between the USA and European network organizations like NORDUNET, DFN and others.

The final objective within Europe will be to implement the BITNET II approach with a full connectivity among the core sites. This will require the availability of an European high speed backbone with an appropriate redundancy level.

The regionalization Plan is currently being implemented with the cooperation of the EARN Routing Project Group and Network Operations Group members and it is coordinated by Daniele Bovio, from the EARN Office in Paris.



Treasurer's Report

Summary of 1990 accounts

EARN ended the financial year 1990 with its finances in a healthy state. There was an underspend in a number of areas. In particular the expected expenditure with respect to the X.25 infrastructure was small as a result of the closure of the infrastructure, the termination of DEC support and subsequent repayment of part of their contribution. In other areas there had been minor differences from the budget figures which in general had been under expenditure.

The figures in the detailed accounts are in French Francs as the EARN accounts are kept in this currency. Translated into the ECU, which EARN uses for budgetary purposes, the key figures are:

	budget KECU	**actual KECU**	
	1990	**1990**	**1989**
Expenditure	898	623	427
Surplus and contingency	165	303	202

The surplus and contingency is on the pessimistic side as the EARN reserves are held as bonds and the interest on the bonds is only realised on their sale. The interest would add about 50 KECU to the reserves. The EARN reserves as of December 31 1990 taking account of bonds, bank accounts, debits and credits but excluding interest and non financial assets are 680 KECU or with interest about 730 KECU.

When the accounts were closed, regretfully a number of countries had not paid their subscriptions but this situation has now been rectified in all but a few minor cases.

Full details of the EARN accounts were published at the Spring 1991 Board meeting and can be obtained from the EARN Manager.

1992 budget

The 1992 budget and forward look are based on EARN continuing with its current policies. In a fast moving area it is unclear whether this assumption will be correct and some revision may be needed as events unfold.

The expenditures in 1990 have been less than expected. This follows the pattern of previous years. As a result the Board has decided to base the 1992 budget on the real 1990 expenditures increase by 10% for inflation rather than the 1991 budget increased by 5% for inflation. This results in a reduced budget in which the income and expenditure are likely to balance.

As a result of the underspend in 1990 and previous years, the planned 700 KECU contingency fund has been met a year ahead of target. This led to the deletion of a contribution to the fund in the 1991 budget and no contribution in 1992.

Forward look

The major change is the possible provision of a second transatlantic line in 1993. Apart from that there is an assumption that expenditure will remain the same but inflated by 5%.

Financial control

Quarterly financial statements are now produced rather than statements which are as up to date as possible with respect to a meeting date. The new procedure allows easy comparison between quarters and between years, it also removes the work needed to update accounts at the last possible moment before a Board meeting.

Financial Data

The two following tables reflect the official documents provided by EARN's auditors, KPMG Fiduciaire de France in Montpellier, namely a statement of income and expenditure and a balance sheet for 1990 both in French Francs.

STATEMENT OF INCOME AND EXPENDITURE OF EARN	
FOR THE PERIOD JANUARY 1st, 1990 - DECEMBER 31st, 1990	
INCOME (K FF)	
Countries Contributions	5 836
French Compensation BACKBONE	233
DEC Contribution	415
TOTAL	6 484
EXPENDITURES (K FF)	
International line US	540
X.25 BACKBONE	601
Printing	79
Services	124
External staff	1 112
Consultancy	101
Travel and subsistence	490
EXEC meetings	232
Other meetings	45
Telephone and stamps	84
RARE	7
Correction prior year (DUBLIN OFFICE)	164
EXTERNAL COSTS	3 579
SALARIES AND SOCIAL CHARGES	809
TOTAL	4 388
CURRENT SURPLUS	2 096

ASSETS (F.F) BALANCE SHEET DECEMBER 31, 1990		
	31.12.1990	31.12.1989
FIXED ASSETS Equipment	957 771	6 505 720
CURRENT ASSETS		
Receivables	1 482 375	319 591
Prepaid expenses	3 913	-
Transferable securities	4 778 905	2 829 176
Cash	470 632	386 994
	6 735 827	3 535 761
TOTAL ASSETS	7 693 598	10 041 481

The FIXED ASSETS Equipment item is reduced from 6 505 702 FF to 957 771 FF. This is due to the fact that the EARN BoD decided to donate the so called G-Boxes to the countries.

In the next table we compare the 1991 budget with the 1989 and 1990 accounts, sorted into the same categories as used in the EARN Budget.

Accounts 1989 and 1990 and Budget for 1991 (kECU)						
	Accounts 89		Accounts 90		Budget 91	
	Expenses	Income	Expenses	Income	Expenses	Income
President's Office	26		33		42	
EARN Office	81		140		174	
EARN Staff	79		165		304	
Other expenses	86		91		112	
EARN transatlantic line	101		77		80	
Development	55		117		160	
Contribution to Contingency fund	148		150		0	
Total Expenses	575		773			
Net surplus	54		153	0		
Countries contributions		599		833		788
Other Income		30		93		84
TOTAL	629	629	926	926	872	872

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Sitting from left :		**Avi Cohen**	**Frode Greisen** President	**Alain Auroux** Manager	